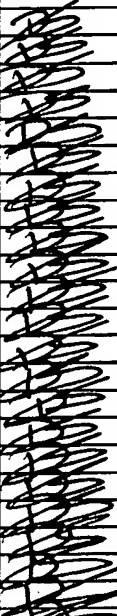




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U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	1A	257,453	05/09/1882	Ader			
	1B	572,981	12/15/1896	Goulvin			
	1C	1,765,735	06/24/1930	Phinney			
	1D	2,352,696	07/04/1944	De Boer <i>et al.</i>	381	2	
	1E	3,158,695	11/24/1964	Camras	369	91	
	1F	3,540,545	11/17/1970	Herleman <i>et al.</i>	181	31	
	1G	3,710,034	01/09/1973	Murry	360	7	
	1H	3,944,735	03/16/1976	Willcocks	179	1	
	1I	4,072,821	02/07/1978	Bauer	381	23	
	1J	4,096,353	06/20/1978	Bauer	381	21	
	1K	4,105,865	08/08/1978	Guillory	179	1	
	1L	4,377,101	03/22/1983	Santucci	84	743	
	1M	4,393,270	07/12/1983	Van Den Berg	381	98	
	1N	4,408,095	11/04/1983	Ariga <i>et al.</i>	381	24	
	1O	4,422,048	12/20/1983	Edwards	330	109	
	1P	4,433,209	02/21/1984	Kurosawa <i>et al.</i>	381	1	
	1Q	4,481,660	11/06/1984	De Koning <i>et al.</i>	381	58	
	1R	4,675,906	06/23/1987	Sessler <i>et al.</i>	381	92	
1S	4,683,591	07/28/1987	Dawson <i>et al.</i>	381	85		
1T	4,782,471	11/01/1988	Klein	367	168		
1U	5,027,403	06/25/1991	Short <i>et al.</i>	381	306		
1V	5,033,092	07/16/1991	Sadale	381	97		
1W	5,046,101	09/03/1991	Lovejoy	381	57		

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
	1X	0 593 228 A	04/20/1994	EUROPE				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	1Y	AMATRIAIN et al., "Transmitting Audio Content as Sound Objects", AES 22 nd International Conference on Virtual, Synthetic and Entertainment Audio, Music Technology Group, IUA, UPF, Barcelona, Spain, pages 1-11.
	1Z	AMUNDSEN, "The Propagator Matrix Related to the Kirchhoff-Helmholtz Integral in Inverse Wavefield Extrapolation", Geophysics, Volume 59, No. 11, December 1994, pages 1902-1909.
	1AA	AVANZINI et al., "Controlling Material Properties in Physical Models of Sounding Objects", ICMC'01-1 Revised Version, pages 1-4.
	1BB	BOONE, "Acoustic Rendering with Wave Field Synthesis", Presented at Acoustic Rendering for Virtual Environments, Snowbird, UT, May 26-29, 2001, pages 1-9.

EXAMINER	DATE CONSIDERED
D. Swardlow	3/30/05
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U.S. PATENT DOCUMENTS

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	2A	5,058,170	10/15/1991	Kanamori <i>et al.</i>	381	92	
	2B	5,150,262	09/22/1992	Hosokawa <i>et al.</i>	360	48	
	2C	5,225,618	07/06/1993	Wadhams	84	602	
	2D	5,260,920	11/09/1993	Ide <i>et al.</i>	369	5	
	2E	5,315,060	05/24/1994	Paroutaud	84	726	
	2F	5,400,405	03/21/1995	Petroff	381	1	
	2G	5,400,433	03/21/1995	Davis <i>et al.</i>	704	220	
	2H	5,404,406	04/04/1995	Fuchigami <i>et al.</i>	381	17	
	2I	5,452,360	09/19/1995	Yamashita <i>et al.</i>	381	63	
	2J	5,465,302	11/07/1995	Lazzari <i>et al.</i>	381	92	
	2K	5,497,425	03/05/1996	Rapoport	381	18	
	2L	5,506,907	04/09/1996	Ueno <i>et al.</i>	381	18	
	2M	5,506,910	04/09/1996	Miller <i>et al.</i>	381	103	
	2N	5,524,059	06/04/1996	Zurcher	381	92	
	2O	5,627,897	05/06/1997	Gagliardini <i>et al.</i>	381	71.7	
	2P	5,657,393	08/12/1997	Crow	381	92	
	2Q	5,740,260	04/14/1998	Odum	381	119	
	2R	5,781,645	07/14/1998	Beale	381	182	
	2S	5,790,673	08/04/1998	Gossman	381	71.1	
	2T	5,822,438	10/13/1998	Sekine <i>et al.</i>	381	17	
	2U	5,850,455	12/15/1998	Arnold <i>et al.</i>	381	17	
	2V	6,041,127	03/21/2000	Elko	381	92	
	2W	6,154,549	11/28/2000	Arnold <i>et al.</i>	381	104	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	2X	BUDNIK, "Discretizing the Wave Equation". In <i>What is and what will be: Integrating Spirituality and Science</i> . Retrieved July 3, 2003, from http://www.mtnmath.com/whatt/node47.html , 12 pages.
	2Y	CAMPOS, <i>et al.</i> , "A Parallel 3D Digital Waveguide Mesh Model with Tetrahedral Topology for Room Acoustic Simulation", Proceedings of the COST G-6 Conference on Digital Audio Effects (DAFX-00), Verona, Italy, December 7-9, 2000, pages 1-6.
	2Z	CAULKINS <i>et al.</i> , "Wave Field Synthesis Interaction with the Listening Environment, Improvements in the Reproduction of Virtual Sources Situated Inside the Listening Room", Proc. of the 6 th Int. Conference on Digital Audio Effects (DAFX-03), London, U.K. September 8-11, 2003, pages 1-4.

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D. Sverdlow	3/30/05
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U.S. PATENT DOCUMENTS

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	3A	6,219,645	04/17/2001	Byers	704	275	
	3B	6,239,348	05/29/2001	Metcalf	84	723	
	3C	6,444,892	09/03/2002	Metcalf	84	723	
	3D	6,608,903	08/19/2003	Miyazaki et al.	381	17	
	3E	6,740,805	05/25/2004	Metcalf	84	723	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
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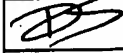


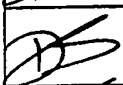


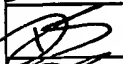



OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	3F	CHOPARD et al., "Wave Propagation in Urban Microcells: A Massively Parallel Approach Using the TLM Method", Retrieved July 3, 2003, from http://cui.unige.ch/~luthi/links/tlm/tlm.html , 1 page.						
	3G	COREY et al., "An Integrated Multidimensional Controller of Auditory Perspective in a Multichannel Soundfield", presented at the 111 th Convention of the Audio Engineering Society, New York, New York, pages 1-10.						
	3H	DAVIS, "History of Spatial Coding", <u>Journal of the Audio Engineering Society</u> , Volume 51, No. 6, June 2003, pages 554-569.						
	3I	DE POLI et al., "Abstract Musical Timbre and Physical Modeling", June 21, 2002, pages 1-21.						
	3J	DE VRIES et al., "Auralization of Sound Fields by Wave Field Synthesis", Laboratory of Acoustic Imaging and Sound Control, pages 1-10.						
	3K	DE VRIES et al., "Wave Field Synthesis and Analysis Using Array Technology", Proc. 1999 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics, New Paltz, New York, Oct. 17-20, 1999, pages 15-18.						
	3L	FARINA et al., "Realisation of 'Virtual' Musical Instruments: Measurements of the Impulse Response of Violins Using MLS Technique", 9 pages.						
	3M	FARINA et al., "Subjective Comparisons of 'Virtual' Violins Obtained by Convolution", 6 pages.						
	3N	HOLT, "Surround Sound: The Four Reasons", <u>The Absolute Sound</u> , April/May 2002, pages 31-33.						
	3O	HORBACH et al., "Numerical Simulation of Wave Fields Created by Loudspeaker Arrays", Audio Engineering Society 107 th Convention, New York, New York, September 1999, pages 1-16.						
	3P	KLEINER et al., "Emerging Technology Trends in the Areas of the Technical Committees of the Audio Engineering Society", <u>Journal of the Audio Engineering Society</u> , Volume 51, No. 5, May 2003, pages 442-451.						
	3Q	LANDONE et al., "Issues in Performance Prediction of Surround Systems in Sound Reinforcement Applications", Proceedings of the 2 nd COST G-6 Workshop on Digital Audio Effects (DAFx99), NTNU, Trondheim, December 9-11, 1999, 6 pages.						
	3R	LOKKI et al., "The DIVA Auralization System", Helsinki University of Technology, pages 1-4.						

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	4A	"Lycos Asia Malaysia - News", printed on December 3, 2001, from http://livenews.lycosasia.com/mv/ , 3 pages.					
	4B	MARTIN, "Toward Automatic Sound Source Recognition: Identifying Musical Instruments", presented at the NATO Computational Hearing Advanced Study Institute, Il Ciocco, Italy, July 1-12, 1998, pages 1-6.					
	4C	MELCHIOR <i>et al.</i> , "Authoring System for Wave Field Synthesis Content Production", presented at the 115 th Convention of the Audio Engineering Society, New York, New York, October 10-13, 2003, pages 1-10.					
	4D	MILLER-DALY, "What You Need to Know About 3D Graphics/Virtual Reality: Augmented Reality Explained", retrieved December 5, 2003, from http://web3d.about.com/library/weekly/aa012303a.htm , 3 pages.					
	4E	MULLER-TOMFELDE, "Hybrid Sound Reproduction in Audio-Augmented Reality", AES 22 nd International Conference on Virtual, Synthetic and Entertainment Audio, pages 1-6.					
	4F	NEUMANN <i>et al.</i> , "Augmented Virtual Environments (AVE) for Visualization of Dynamic Imagery", Integrated Media Systems Center, Los Angeles, California, 5 pages.					
	4G	"New Media for Music: An Adaptive Response to Technology", <u>Journal of the Audio Engineering Society</u> , Volume 51, No. 6, June 2003, pages 575-577.					
	4H	NICOL <i>et al.</i> , "Reproducing 3D-Sound for Videoconferencing: a Comparison Between Holophony and Ambisonic", France Telecom CNET Lannion, 4 pages.					
	4I	RIEGELSBERGER <i>et al.</i> "Advancing 3D Audio Through an Acoustic Geometry Interface, 6 pages.					
	4J	"Brains of Deaf People Rewire to 'Hear' Music", <u>ScienceDaily Magazine</u> , University of Washington, November 28, 2001, 2 pages.					
	4K	SMITH, "Deaf People Can 'Feel' Music: Might Explain How Some Are Able to Become Performers", retrieved December 3, 2001, from http://my.webmd.com/printing/article/1830.50576 , 1 page.					
	4L	SONTACCHI <i>et al.</i> , "Enhanced 3D Sound Field Synthesis and Reproduction System by Compensating Interfering Reflections", Proceedings of the COST G-6 Conference on Digital Audio Effects (DAFX-00, Verona, Italy, December 7-9, 2000, pages 1-6.					
	4M	SPORS <i>et al.</i> , "High-Quality Acoustic Rendering with Wave Field Synthesis", University of Erlangen-Nuremberg, Erlangen, Germany, November 20-22, 2002, 8 pages.					
	4N	THEILE, "Spatial Perception in WFS Rendered Sound Fields", 2 pages.					
	4O	THEILE <i>et al.</i> , "Potential Wavefield Synthesis Applications in the Multichannel Stereophonic World", AES 24 th International Conference on Multichannel Audio, pages 1-15.					

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	5A	TOOLE, "Direction and Space, the Final Frontiers: How Many Channels do We Need to be Able to Believe that We are 'There'?", Harman International Industries, Northridge, California, pages 1-30.					
	5B	TOOLE, "Audio-Science in the Service of Art," Harman International Industries, Northridge, California, pages 1-23.					
	5C	TSINGOS <i>et al.</i> , "Validation of Acoustical Simulations in the 'Bell Labs Box'", Bell Laboratories-Lucent Technologies, 7 pages.					
	5D	University of York Music Technology Research Group, "Surrounded by Sound—A Sonic Revolution", retrieved February 10, 2004, from http://www-users.york.ac.uk/~dtm3/RS/RSweb.htm , 7 pages.					
	5E	VAANANEN, "User Interaction and Authoring of 3D Sound Scenes in the Carrouso EU Project", Audio Engineering Society Convention Paper 5764, Presented at the 114 th Convention, March 22-25, 2003, pages 1-9.					
	5F	VAANANEN <i>et al.</i> , "Encoding and Rendering of Perceptual Sound Scenes in the Carrouso Project", AES 22 nd International Conference on Virtual, Synthetic and Entertainment Audio, pages 1-9.					
	5G	"Virtual and Synthetic Audio: The Wonderful World of Sound Objects", <u>Journal of Audio Engineering Society</u> , Volume 51, No. 1/2, January/February 2003, pages 93-98.					
	5H	WITTEK, "Optimised Phantom Source Imaging of the High Frequency Content of Virtual Sources in Wave Field Synthesis", A Hybrid WFS/Phantom Source Solution to Avoid Spatial Aliasing, Munich, Germany: Institut für Rundfunktechnik, 2002, pages 1-10.					
	5I	WITTIK, "Perception of Spatially Synthesized Sound Fields", University of Surrey – Institute of Sound Recording, Guildford, Surrey, UK, December 2003, pages 1-43.					
	5J	YOUNG, "Networked Music: Bridging Real and Virtual Space", Peabody Conservatory of Music, Johns Hopkins University, Baltimore, Maryland, 4 pages.					
	5K	"Discretizing of the Huygens Principle", retrieved July 3, 2003, from http://cui.unige.ch/~luthi/links/tlm/node3.htm , 2 pages.					
	5L	"The Dispersion Relation", retrieved May 14, 2004, from http://cui.unige.ch/~luthi/links/tlm/node4.html , 3 pages.					

EXAMINER	DATE CONSIDERED
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